WHAT IS CLAIMED IS:

1. A process for cracking an olefin-rich hydrocarbon feedstock which is selective towards light olefins in the effluent, the process comprising contacting a hydrocarbon feedstock containing olefins having a first composition of at least one olefinic component with a crystalline silicate catalyst to produce an effluent having a second composition of at least one olefinic component, the feedstock and the effluent having substantially the same olefin content by weight therein as the feedstock.

2. A process according to claim 1, wherein the catalyst comprises silicalite.

3. A process according to claim 1, wherein the catalyst has a silicon/aluminum atomic ratio of at least 180.

4. A process according to claim 1, wherein the feedstock comprises a light cracked naphtha.

5. A process according to claim 1, wherein the feedstock is selected from the group consisting of a C_4 cut from a fluidised-bed catalytic cracking unit in a refinery, or a C_4 cut from a unit in a refinery for producing methyl tert-butyl ether and a C_4 cut from a steam-cracking unit.

6. A process according to claim 1, wherein the feedstock is selected from the group consisting of a C_5 cut from a steam cracker and light cracked naphtha.

7. A process according to claim 4, wherein at least 90% of the C_2 to C_3 compounds present in the effluent are present as C_2 to C_3 olefins.

8. A process according to claim 5, wherein at least 95% of C_2 to C_3 compounds present in the effluent are present as C_2

to C_3 olefins.

9. A process according to claim 1, wherein the catalytic cracking has a propylene yield on an olefin basis of from 30 to 50% based on the olefin content of the feedstock.

10. A process according to claim 1, wherein the olefin contents by weight of the feedstock and of the effluent are within ±15% of each other.

11. A process according to claim 1, wherein the feedstock contacts the catalyst at an inlet temperature of from 500 to 600°C.

12. A process according to claim 11, wherein the inlet temperature is from 540 to 580°C.

13. A process according to claim 1, wherein the feedstock contacts the catalyst at an olefin partial pressure of from 0.1 to 2 bar.

14. A process according to claim 13, wherein the olefin partial pressure is around atmospheric pressure.

15. A process according to claim 1, wherein the feedstock is passed over the catalyst at an LHSV of from 10 to $30h^{-1}$.

16. A process according to claim 1, wherein the feedstock has a maximum diene concentration therein of 0.1wt%.

17. A process according to claim 16, wherein the dienes have been removed from the feedstock prior to the cracking step by selective hydrogenation.

18. A process according to claim 17, wherein the diene hydrogenation process is carried out at an absolute pressure of

from 20 to 30 bar and an inlet temperature of from 40 to 200°C.

19. A process according to claim 18, wherein the LHSV of the feedstock in the diene hydrogenation process is from 2 to $5h^{-1}$.

20. A process for the cracking of olefins in a hydrocarbon feedstock containing at least one diene and at least one olefin, the process comprising hydrogenating the at least one diene to form at least one olefin in the presence of a transition metal-based hydrogenation catalyst at an inlet temperature of from 40 to 200°C and an absolute pressure of from 5 to 50 bar with a hydrogen/diene molar ratio of at least around 1, and catalytically cracking the olefins in the presence of a crystalline silicate catalyst at an inlet temperature of from 500 to 600°C and an olefin partial pressure of from 0.1 to 2 bar to produce at least one olefin having a different olefin distribution with respect to average carbon number than the at least one olefin in the feedstock.

21. A process for the production of C_2 to C_3 olefins from a light cracked naphtha, the process comprising contacting the light cracked naphtha with a catalyst of the silicalite type having a silicon/aluminum atomic ratio of at least 180 to produce by selective cracking an olefinic effluent wherein at least 90% of the C_2 to C_3 compounds are present as C_2 to C_3 olefins.

22. A process for production of C_2 and/or C_3 olefins from a C_4 olefinic feedstock, the process comprising contacting the C_4 olefinic feedstock with a catalyst of the silicalite type having a silicon/aluminum atomic ratio of at least 180 to produce by selective cracking an olefinic effluent wherein at least 95% of the C_2 and/or C_3 compounds are present as C_2 and/or C_3 olefins.

23. A process for the production of C_2 to C_3 olefins from a C_5 olefinic feedstock, the process comprising contacting the

C_5 olefinic feedstock with a catalyst of the silicalite type having a silicon/aluminum atomic ratio of at least 180 to produce by selective cracking an olefinic effluent wherein at least 95% of the C_2 to C_3 compounds are present as C_2 to C_3 olefins.

24. A process according to claim 21, wherein the catalyst has been pretreated so as to increase the silicon/aluminum atomic ratio thereof by heating the catalyst in steam and de-aluminating the catalyst by treating the catalyst with a complexing agent for aluminum.

25. A process according to claim 22, wherein the catalyst has been pretreated so as to increase the silicon/aluminum atomic ratio thereof by heating the catalyst in steam and de-aluminating the catalyst by treating the catalyst with a complexing agent for aluminum.

26. A process according to claim 23, wherein the catalyst has been pretreated so as to increase the silicon/aluminum atomic ratio thereof by heating the catalyst in steam and de-aluminating the catalyst by treating the catalyst with a complexing agent for aluminum.

27. A process for the catalytic cracking of olefins to lighter olefins, the process comprising contacting a first hydrocarbon stream comprising light cracked naphtha and a second hydrocarbon stream comprising C_4 olefins with a crystalline silicate catalyst at a temperature of from 500 to 600°C and at an absolute pressure of from 0.5 to 2 bars to produce an effluent stream rich in lighter olefins.